AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A bar-code reader that acquires a signal strength of a reflected light that is reflected from black bars and white bars that form a bar code, extracts edge data that changes the signal strength from a black bar to a white bar and vice versa, ternarizes the edge data that is extracted, and decodes bar-code characters by using a result of the ternarizing, comprising:

an amplitude acquiring unit that acquires an amplitude of each module point of the edge data based on a module frequency of the edge data; and

a ternarizing processor that ternarizes the amplitude of the module point by a maximum likelihood method by using amplitudes of a module point and a plurality of module points that are in continuation with the module point,

wherein the ternarizing processor assigns a state 1, a state 0, and a state -1 that have predetermined reference values respectively, to a plurality of module points in continuity, assigns a least squared error to the amplitude of a module that is to be linked to a path that connects each module point, as a path metric, and ternarizes a state of a module point that is at the origin of a path linkage of a survival path, taking a path for which a sum of path metrics that have gone through a predetermined path becomes minimum as a survival path.

Claim 2 (Canceled)

Claim 3 (Currently Amended): The bar-code reader according to claim [[2]] 1, wherein the ternarizing processor inhibits a path from the state 1 to the state 1 and a path from the state -1 to the state -1.

Claim 4 (Currently Amended): The bar-code reader according to claim [[2]] 1, wherein the ternarizing processor inhibits a path from the state 1 to the state 1 via a desired number of the states 0, and a path from the state -1 to the state -1 via a desired number of the states 0.

Claim 5 (Currently Amended): The bar-code reader according to claim [[2]] 1, wherein the ternarizing processor leaves a path from the state 0 to the state 0, when there is a path from the state 1 or the state -1 to the state 0.

Claim 6 (Currently Amended): The bar-code reader according to claim [[2]] 1, wherein, when there is any one of a thick black bar and a thick white bar, the ternarizing processor changes the reference of any one of the state 1 and the state -1 according to a thickness of any one of a thick black bar and a thick white bar.

Claim 7 (Currently Amended): A method of reading a bar code in which a signal strength of a reflected light that is reflected from black bars and white bars that form a bar code is acquired, edge data that changes the signal strength from a black bar to a white bar and vice versa, is extracted, the edge data that is extracted is ternarized, and bar-code characters are decoded by using a result of the ternarizing, comprising:

acquiring an amplitude of each module point of the edge data based on a module frequency of the edge data; and

ternarizing the amplitude of the module point by a maximum likelihood method by using amplitudes of a module point and a plurality of module points that are in continuation with the module point,

wherein at the ternarizing, a state 1, a state 0, and a state -1 that have predetermined reference values respectively, are assigned to a plurality of module points in continuity, a least squared error is assigned to the amplitude of a module that is to be linked to a path that connects each module point, as a path metric, and a state of module point that is at the origin of a path linkage of a survival path is ternarized, taking a path for which a sum of path metrics that have undergone through predetermined path becomes the least as a survival path.

Claim 8 (Canceled)

Claim 9 (Currently Amended): The method of reading a bar code according to claim [[8]] 7, wherein a path from the state 1 to the state 1 and a path from the state -1 to the state -1 are inhibited at the ternarizing.

Claim 10 (Currently Amended): The method of reading a bar code according to claim [[8]] 7, wherein a path from the state 1 to the state 1 via a desired number of the states 0, and a path from the state -1 to the state -1 via a desired number of the states 0 are inhibited at the ternarizing.

Claim 11 (Currently Amended): The method of reading a bar code according to claim [[8]] 7, wherein when there is a path from any one of the state 1 and the state -1 to the state 0, a path from the state 0 to the state 0 is left at the ternarizing.

Claim 12 (Currently Amended): The method of reading a bar code according to claim [[8]] 7, wherein when there is any one of a thick black bar and a thick white bar, the reference of any one of the state 1 and the state -1 is changed according to a thickness of any one of a thick black bar and a thick white bar at the ternarizing.

Claim 13 (Currently Amended): A bar-code reading computer program that includes a plurality of computer readable instructions that control a bar-code reader that acquires a signal strength of a reflected light that is reflected from black bars and white bars that form a bar code,

extracts edge data that changes the signal strength from a black bar to a white bar and vice versa, ternarizes the edge data that is extracted, and decodes bar-code characters by using a result of the ternarizing, wherein the instructions, when executed by the computer, cause the computer to perform: acquiring an amplitude of each module point of the edge data based on a module frequency of the edge data; and ternarizing the amplitude of the module point by a maximum likelihood method by using amplitudes of a module point and a plurality of module points that are in continuation with the module point,

wherein at the ternarizing, a state 1, a state 0, and a state -1 that have predetermined reference values respectively, are assigned to a plurality of module points in continuity, a least squared error is assigned to the amplitude of a module that is to be linked to a path that connects each module point, as a path metric, and a state of module point that is at the origin of a path linkage of a survival path is ternarized, taking a path for which a sum of path metrics that have gone through predetermined path becomes the least as a survival path.

Claim 14 (Canceled)

Claim 15 (Currently Amended): The bar-code reading computer program according to claim [[14]] 13, wherein a path from the state 1 to the state 1 and a path from the state -1 to the state -1 are inhibited at the ternarizing.

Claim 16 (Currently Amended): The bar-code reading computer program according to claim [[14]] 13, wherein a path from the state 1 to the state 1 via a desired number of the states 0, and a path from the state -1 to the state -1 via a desired number of the states 0 are inhibited at the ternarizing.

Claim 17 (Currently Amended): The bar-code reading computer program according to claim [[14]] 13, wherein when there is a path from any one of the state 1 and the state -1 to the state 0, a path from the state 0 to the state 0 is left at the ternarizing.

Claim 18 (Currently Amended): The bar-code reading computer program according to claim [[14]] 13, wherein when there is any one of a thick black bar and a thick white bar, the reference of any one of the state 1 and the state -1 is changed according to a thickness of any one of a thick black bar and a thick white bar at the ternarizing.